

WHAT IS CLAIMED IS:

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1. A field isolation process comprising growing a silicon dioxide field isolation region on a semiconductor wafer by means of a hydrogen-free oxidant.
2. The process of Claim 1 wherein the oxidant comprises substantially only oxygen.
3. The process of Claim 1, further comprising exposing the semiconductor wafer to the oxidant at an oxidant partial pressure greater than 5 atm.
4. The process of Claim 1, further comprising maintaining the semiconducting wafer at a temperature greater than 900 °C.
5. A method of growing a field oxide region on a semiconductor wafer comprising the steps of:
 - growing a first portion of the field oxide region by means of exposing a portion of the wafer to a first oxidizing ambient comprising water vapor; and
 - growing a second portion of the field oxide region by means of exposing the portion of the wafer to a second oxidizing ambient comprising oxygen.
6. The method of Claim 5, wherein the first oxidizing ambient is maintained at a temperature greater than 900 °C and a pressure greater than 5 atm.
7. The method of Claim 5, wherein the second oxidizing ambient is maintained at a temperature greater than 900 °C and pressure greater than 5 atm.
8. A field isolation region on a semiconductor wafer formed by a process comprising:
 - exposing a field region of the semiconductor wafer to an oxidizing ambient comprising substantially only oxygen.
9. The field isolation region of Claim 8, wherein the oxidizing ambient is maintained at a pressure greater than 5 atm and a temperature greater than 900 °C.
10. The field isolation region of Claim 8, further comprising exposing the field region to an oxidizing ambient comprising water vapor prior to exposing the field region to the oxidizing ambient comprising substantially only oxygen.

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